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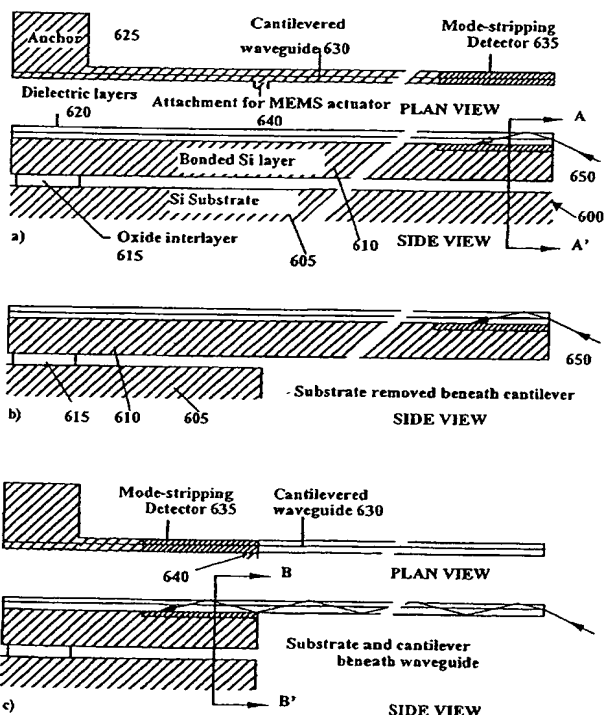
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(54) Title: MICROENGINEERED OPTICAL SCANNER



(57) Abstract: A microengineered optical scanner based on a moving cantilevered dielectric waveguide is described. The waveguide is excited into resonant mechanical motion by a drive located at its root. Stress sensors detect the bending of the waveguide, allowing closed loop control of the motion. A moving image of the light emitted from the moving tip of the waveguide is created by a lens. The moving image acts as a scan line. Light back-scattered from a rough surface placed at the image plane is collected back into the waveguide by confocal imaging. The light collected in the cladding of the waveguide has higher numerical aperture than the light collected in the core. The cladding light is detected by a mode-stripping detector. Techniques for combining a cantilevered waveguide, a drive, motion sensors and a mode-stripping detector using microelectromechanical systems (MEMS) technology are described.

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